

VOLAROVICH, M.P.

Conference on structural and mechanical properties of colloidal
systems and of high molecular weight compounds. Koll.zhur. 16 no.6:
474-477 N-D '54. (MLBA 7:12)
(Colloids) (High molecular weight compounds)

VOLAROVICH, M. P.
USSR/Geophysics - Piezoelectric effect

Card 1/1 Pub. 22 - 14/40

Authors : Volarovich, M. P., and Parkhomenko, E. I.

Title : Piezoelectric effect of mountain rocks

Periodical : Dok. AN SSSR 99/2, 239-242, Nov 11, 1954

Abstract : For the purpose of determining whether or not mountain rocks possess the piezo-electric effect, experiments were performed with samples of various rocks such as gabbro, diabase, diorite, syenite, granite, quartz, and others. A pulse supersonic-seismoscope was used for the experiments. Four USSR references (1940-1953). Graphs.

Institution : Geophysical Institute of the Acad. of Scs. of the USSR

Presented by: Academician G. A. Gamburtzev, September 21, 1954

VOLAROVICH, M. P.
USSR/Geophysics - Seismology

FD-1732

Card 1/1 Pub 45-4/18

Author : Volarovich, M. P., and Parkhomenko, E. I.

Title : Piezoelectric effect of mineral rocks

Periodical : Izv. AN SSSR, Ser. geofiz. 215-222, May-Jun 1955

Abstract : The author observes that a piezoelectric effect is detected in quartz-containing mineral rocks: granites, quartzite, sandstones, etc. He works out a procedure for applying the ultrasonic seismoscope to the investigation of the piezoelectric effect. Here the samples of mineral rocks operate as electromechanical converters. The author establishes the absence of the observed piezoeffect upon the seismoelectric effect of moist mineral rocks. He makes some assumptions concerning the possible employment of the piezoeffect of mineral rocks in the solution of certain geophysical problems. He thanks B. N. Ivakin, A. G. Ivanov, and M. S. Antsyferov. Twelve references; e.g. Yu. V. Riznichenko, B. N. Ivakin, and V. D. Bugrov, "Impulse ultrasonic seismoscope," Izv. AN SSSR, Ser. geofiz. No 1, 1953.

Institution: Geophysical Institute, Academy of Sciences USSR

Submitted : May 3, 1954

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 3,
p 212 (USSR) 15-57-3-4029

AUTHORS: Volarovich, M. P., Churayev. N. V.

TITLE: A Study of the Dispersion Stage of Peat (Issledovaniye
stepeni dispersnosti torfa)

PERIODICAL: Tr. Mosk. torf. in-ta, 1955, Nr 3, pp 33-58

ABSTRACT: A collection of papers is given on the study of the
stage of dispersion in peat. The peculiar features of
peat suspensions are noted and their behavior during
sedimentational analysis, showing polydispersion,
anomalies of density, and tendency to orthokinetic
coagulation. A variety of sedimentation meter, appli-
cable to peat suspensions, was made by N. A. Figurov-
skiy. The authors present equations made from the
results of using this sedimentation meter. Curves are
also presented to show the distribution of particles,
according to size, for peats of different stages of
reworking and different stages of decomposition. The

Card 1/2

15-57-3-4029

A Study of the Dispersion Stage of Peat (Cont.)

results of electron-microscopic studies of the highly dispersed part
of the peat are described.

D. A. Ts.

Card 2/2

FD-3019

USSR/Physics - Flow

Card 1/1 Pub. 41 - 3/15

Author : Volarovich, M. P. and Gutkin, A. M., Moscow

Title : ~~Some questions on the theory of plastic flow~~
: Some questions on the theory of plastic flow

Periodical : Izv. AN SSSR, Otd. Tekh. Nauk 9, 37-42, Sep 55

Abstract : The article was originally presented at the conference on the theory of elasticity, the theory of plasticity and theoretical structural mechanics held at the Institute of Mechanics Acad Sci USSR on 25 December 1954. Presents mathematical solution of two cases of plastic flow. Relates flow to linear, conical and spherical motion. Lists series of theoretical conclusions for cases studied. Formulae, diagram. Fifteen references, 10 USSR.

Institution:

Submitted : June 8, 1955

VOLAROVICH, M.P.; CHURAYEV, N.V.

~~SECRET~~
Study of the degree of dispersion for peat. Koll.shur. 17
no.3:200-206 My-Je '55. (MIRA 8:8)

1. Moskovskiy torfyanoy institut.
(Peat)

1128. EFFECT OF HIGH PRESSURES ON THE MOLECULAR STRUCTURE OF COALS.
 FU Razumova, L.L., Kasatochkin, V.I. and Volarovich, M.P. (Dokl. Akad. Nauk
 SSSR (Rep. Acad. Sci. U.S.S.R.), 21 Aug. 1955, Vol. 103, (6), 1033, 1034).
 An X-ray examination was made of the vitrain portion of G, K and PS Donets
 coals and anthracite, and of humic acids extracted from weathered coals.
 Sample briquettes were submitted to a pressure of 20,000 atm for ten minutes
 and X-ray photographs were taken, before and after pressing, in a direction at
 right angles to the direction of pressure. The photographs of the K and PS
 samples show a non-uniform darkening of the CO₂ interference ring round the
 sample. There are two darker segments on the diameter which lies in the
 direction of pressure. X-ray photographs were also taken of pulverized K and
 PS coals against copper radiation in a cylindrical chamber. The effect of
 pressure was a considerable widening of the CO₂ band and an intensification of
 the background of independent scattering. These phenomena show that there is
 a molecular mechanism behind the occurrence of structural anisotropy under
 pressure, since the width of the CO₂ band is an index of interlattice
 regularity and increases through the destruction of coherently scattering
 spaces as the individual carbon lattices turn. The intensification of the
 background of independent scattering is also attributed to the increase in the
 number of individual, mutually unregulated lattices. Oxidized K coals, and
 humic acids from weathered coals, showed no structural anisotropy after
 pressure, and G coals and anthracite showed little, owing to the rigidity of
 their molecular structures. The rigidity of low rank, oxidized medium rank
 coals and humic acids is due to their content of oxygen and its ability to form
 bridge bonds (valency and hydrogen bonds) between the side chains. The
 ability of carbon lattices to orient themselves varies with the rank of the
 coal in the same way as the ability of the coal to become plastic when heated.
 It is suggested that a similar plasticity is induced by pressure and that it is
 connected with the breaking of side chains. (L).

(2)

VOLAROVICH, M.P.

LAZAREV, P.P.; SHULEYKIN, V.V., akademik, redaktor; DERYAGIN, B.V., redaktor;
FRANK, G.M., redaktor; VOLAROVICH, M.P., professor, redaktor;
YEFIMOV, professor, redaktor; MASLOV, professor, redaktor; KUZIN,
A.M., professor, redaktor; KUZNETSOVA, Ye.B., redaktor; SHEVCHENKO,
G.N., tekhnicheskii redaktor.

[Collection in memory of Academician P.P.Lazarev] Sbornik posvia-
shchennyi pamiati akademika P.P.Lazareva. Moskva, Izd-vo Akademii
nauk SSSR, 1956. 374 p. (MIRA 9:6)

1. Akademiya nauk SSSR. 2.Chlen-korrespondent AN SSSR (for Derya-
gin). 3.Chlen-korrespondent AMN (for Frank).
(Physics) (Physiology) (Geophysics)

VOLAROVICH, M. P.; Ginzburg, L. Ya.; Gusev, K. F.

"Viscosity, Structure and Adhesive Properties of Glue Solutions" (Vyazkost', struktura i kleyashchiye svoystva kleyevykh rastvorov) from the book
Study of the Third All-Union Conference on Colloid Chemistry, pp.155-170

Iz. AN SSSR, Moscow, 1956

(Report given at above Conferende, Minsk, 21-4 Dec 53)

author: Chair of Physics of Moscow Peat Institute
and Laboratory of the Shoe Factory "Paris Commune"

VOLAROVICH, M. P.; Churayev, N. V.

"Study of the Degree of Dispersion of Peats and the Structure of their Parts by means of a Sedimentometer and Electron Microscope" (Issledovaniya stepeni dispersnosti torfov i struktury ikh chastits metodami sedimentometra i elektronnoy mikroskopy) from the book Trudy of the Third All-Union Conference on Colloid Chemistry, pp. 258-275

(Report given at above Conference, Minsk, 21-4 Dec 53)

Authors: Moscow Peat Institute, Chair of Physics

DERYAGIN, B.V.; VOLAROVICH, M.P.

Petr Petrovich Lazarev, founder of Russian biophysics. Biofizika
1 no.3:193-200 '56. (MLRA 9:9)
(LAZAREV, PETR PETROVICH, 1878-1942)
(BIOPHYSICS)

VOLKOVICH, M.P.

Cher...

VOLAROVICH, M.P.; LEVI, S.M.

In memory of Fedor Nikiforovich Shvedov; on the semicentenary of
his death. Koll.zhur.18 no.2:129-134 Mr-Ap '56. (MLRA 9:8)
(Shvedov, Fedor Nikiforovich, 1840-1905)

VOLABOVICH, M.P.

SOV/124-57-9-10918

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 9, p 154 (USSR)

AUTHORS: Volarovich, M. P., Balashov, D. B.

TITLE: Study of the Effect of Omnilateral Pressures up to 1000 kg/cm^2 on the Speed of Elastic Wave Propagation in Specimens of Coal (Izucheniye vliyaniya vsestoronnego davleniya do 1000 kg/cm^2 na skorost' raspostraneniya uprugikh voln v obraztsakh ugley)

PERIODICAL: Tr. Geofiz in-ta, AN SSSR, 1956, Nr 34, (161), pp 164-178

ABSTRACT: A description of the methods employed and the results obtained in experiments for the elastic-wave propagation speed in various types of coal subjected to omnilateral pressure of up to 1000 kg/cm^2 . It was determined that the elastic-wave propagation speed follows a curvilinear law increasing with pressure. A qualitative explanation of the effects observed is given.

From the authors' résumé

Card 1/1

VOLAROVICH, M. P.

124-11-13252

Translation from: Referativnyy Zhurnal, Mekhanika, 1957, Nr 11, p. 140 (USSR)

AUTHORS: Volarovich, M. P., and Parkhomenko, E. I.

TITLE: The Study of Sudden Eruption Phenomena and Other Motions of Coal by Means of the Compression of Cylindrical Samples in Steel Cylinders Equipped with Lateral Apertures. (Izucheniye yavleniy vnezapnykh vybrosov i drugikh dvizheniy uglya putem szhatiya obraztsov tsilindricheskoy formy v stal'nykh tsilindrakh s bokovym otverstiyem)

PERIODICAL: Tr. Geofiz. in-ta A N SSSR, 1956, Nr 34 (161), pp 179-192

ABSTRACT: Observations were made of different types of failures similar to cave-ins, explosive failures and eruption of coal. For this purpose samples of coal were placed in a steel cylinder having an aperture and subjected to mechanical stresses (in conditions of non-uniform tri-axial pressure). The kinetic energy of the laboratory "eruption" of the coal was evaluated in terms of the launching speed of a steel probe placed in the aperture. The stress distribution on the sample was studied by an optical method employing polarized light on a transparent model, and the principal sectors of stress concentration were

Card 1/2

124-11-13252

The Study of Sudden Eruption Phenomena and Other Motions of Coal by Means of the
Compression of Cylindrical Samples in Steel Cylinders Equipped with Lateral
Apertures. (Continued)

identified. The results obtained confirm the concept that the initial
stage of a sudden eruption of coal in mine shafts is created by intense
stress concentrations in specific work areas.

(Authors' resume)

Card 2/2

VOLAROVICH, M.P.

124-11-13253

Translation from: Referativnyy Zhurnal, Mekhanika, 1957, Nr 11, p. 140 (USSR)

AUTHORS: Volarovich, M. P., and Parkhomenko, E. I.

TITLE: The Reproduction on Slender Samples of Sudden Eruption Phenomena
of Coal under the Effect of Compression and Simultaneous Torsion.
(Vosproizvedeniye yavleniy vnezapnykh vybrosov uglya pri szhatii i
odnovremennom kruchenii tonkikh obraztsov.)

PERIODICAL: Tr. Geofiz. in-ta A. N SSSR, 1956, Nr 34 (161), pp 193-207

ABSTRACT: Bibliographic entry.

Card 1/1

VOLAROVICH, M. P.

"On the Mechanical Properties of Rocks," paper presented at the First All-Union Conference on Tectonophysics, Moscow, 29 January through 5 February 1957.

Institute of Physics of the Earth, Academy of Sciences USSR.

Sum 1563

VOLAROVICH, M. P.

"On the Problems of Modeling Tectonic Phenomena," physicists L. M. Kachanov, Ye. I. Edel'shteyn, G. V. Vinogradov, G. N. Kuznetsov, M. P. Volarovich, and A. V. Stepanov and geologists F. I. Vol'fson, V. A. Aprodov, N. I. Borodayevskiy, and Yu. S. Shikhin -

paper presented at the First All-Union Conference on Tectonophysics, Moscow,
29 Jan - 5 Feb 1957.

Sum 1563

VOLAROVICH, M. P.

BALAKINA, L. M.

X(10)

PHASE I BOOK EXPLANATION

SCW/166)

Akademiya nauk SSSR. Komitet po geodesii i geofizike.

Teslay doklady na XI General'noy assemblye Mezhdunarodnogo geodesicheskogo i geofizicheskogo soyuzn. Mezhdunarodnaya assotsiatsiya seismologii i fiziki neder zemli (Abstracts of Reports Submitted to the XI General Assembly of the International Union of Geodesy and Geophysics. The International Association of Seismology and Physics of the Earth's Interior) Moscow, 1977. 104 p. /Parallel texts in Russian and English/ 1,500 copies printed.

No additional contributors mentioned

PURPOSE: This booklet is intended for geophysicists, especially those specializing in seismology.

COVERAGE: This collection of articles deals with the structure and composition of the Earth and phenomena related thereto. The majority of the articles concern studies of earthquakes and seismic waves. Other articles cover the structure of the Earth's crust and mountain roots; the elastic properties of rocks at high pressures; the piezoelectric effect of rocks and the method of modelling in tectonophysics. The collection also contains articles on the Earth's thermal history, the microseismic method of tracing storms and others.

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modelling in tectonophysics. The collection also contains articles on the Earth's thermal history, the microseismic method of tracing storms, and others. No references are given.

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~~SECRET~~
LAZAREV, P.P., akademik; VAVILOV, S.I. [deceased], akademik, red.;
ORBELI, L.A., akademik, red.; SHULEYKIN, V.V., akademik, red.;
DERYAGIN, B.V., red.; KRAVKOV, S.V. [deceased], red.; VOLAROVICH,
M.P., doktor fiz.-matem.nauk, red.; KOVNER, S.S., prof., red.;
FRANK, G.M., d-r biolog.nauk, red.; YEFIMOV, V.V., d-r biologich.
nauk, red.; MASLOV, N.M., nauchnyy sotrudnik, red.; GESSEN, L.V.,
red.izd-va; ZELENKOVA, Ye.V., tekhn.red.

[Works] Sochineniia. Moskva, Izd-vo Akad.nauk SSSR. Vol.1.
1957. 895 p. (MIRA 11:1)

1. Chlen-korrespondent AN SSSR (for Deryagin, Kravkov).
(Physics)

54

AUTHOR: Volarovich, M. P. and Parkhomenko, E. I.

TITLE: Investigation of failure during torsion of thin specimens of rock during unilateral pressure. (Issledovanie razrusheniy pri kruchenii tonkikh obraztsov gornykh porod pri odnostoronnnem davlenii).

PERIODICAL: Izvestiya Akademii Nauk, Seriya Geofizicheskaya, 1957, No.2, pp. 190-199. (U.S.S.R.)

ABSTRACT: In investigating rock formations made up of thin disk-like laminae, explosion type failures were observed under conditions of unilateral compression torsion. Plate-discs of 10 m/m dia. and 0.25, 1.5 and 2 m/m thickness were subjected to torsion under conditions of unilateral compression on a specially designed testing apparatus. The following materials were tested: granite, diabase, basalt and basalt glass, gabbro, sienna, quartz, marble and dolomite.

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TITLE:

Investigation of failure during torsion of thin specimens of rock during unilateral pressure. (Issledovanie razrusheniy pri krucheniі tonkikh obraztsov gornykh porod pri odnostoronnem davlenii).

It was found that the individual specimens differ in behavior with respect to compression and torsion as well as the minimum pressure at which the explosion occurs. Granite, basalt, quartzite etc. become splintered during compression and "ground" in torsion; dolomite and marble deform continuously without splintering and "gnashing". Owing to the high plasticity under pressure, a number of rocks (dolomite and marble) break up with an explosion at pressures which are several times the minimum pressure at which comparable explosions occur in rocks which do not have such plastic properties under pressure, in spite of the fact that they have a high compression strength under atmospheric conditions (granite, basalt etc.). Partly crystallized artificial basalt glass has a considerably higher minimum explosion pressure than the original rock and this is attributed to differences in the structure of this material.

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TITLE: Investigation of failure during torsion of thin specimens of rock during unilateral pressure. (Issledovanie razrusheniy pri kruchenii tonkikh obraztsov gornykh porod pri odnostoronnem davlenii).

The minimum explosion pressures varied between 16 000 kg/cm² and 32 000 kg/cm² and are shown in a table, p.197. A graph, Fig.11, shows the explosion probability curve as function of unilateral pressure for dolomite. The scientist T. Ya. Gorazdovskiy, laboratory workers V. A. Pavlogradskiy and G. A. Suvorova, and geologist M. S. Pichugin participated in this work. The text includes 8 photographs, 2 diagrams, 1 graph and 1 table.

There are 4 references, of which 3 are Slavic.

ASSOCIATION: Academy of Sciences of the USSR, Institute of Terrestrial Physics (Akademiya Nauk SSSR, Intitut fiziki zemli).

Card 3/4

54

TITLE: Investigation of failure during torsion of thin specimens of rock during unilateral pressure. (Issledovanie razrusheniy pri kruchenii tonkikh obraztsov gorn'ikh porod pri odnostoronnem davlenii).

PRESENTED BY:

SUBMITTED: 5/26/56

AVAILABLE: Library of Congress

Card 4/4

49-3-4/16

AUTHORS: Volarovich, M.P. and Balashov, D.B.

TITLE: Investigation of velocities of elastic waves in rock samples at pressures up to 5000 kg/cm^2 . (Issledovaniye skorostey uprugikh voln v obraztsakh gornykh porod pri davlenii do 5000 kg/cm^2).

PERIODICAL: "Izvestiya Akademii Nauk, Seriya Geofizicheskaya" (Bulletin of the Ac.Sc., Geophysics Series), 1957, No.3, pp.319-330 (U.S.S.R.)

ABSTRACT: The object of the work was to develop a pulse method for investigating the velocities of longitudinal waves of ultrasonic frequencies in rock samples at pressures up to 5000 kg/cm^2 . Such pressures prevail in the Earth's crust at depths of the order of 20 km, in which the foci of destructive tectonic earthquakes are located. A detailed description of the apparatus and of the method, by which measurements were made, is given. A sketch of the bomb used for measuring the speed of propagation of elastic waves in rock specimens at pressures of up to 5000 kg/cm^2 is shown in Fig.1, p.320. The pressure was transmitted to the specimen by means of nitrogen with an accuracy of up to 1%. The experiments were carried out at a temperature of 20 C.

Card 1/3 A characteristic feature of the apparatus is the placing of the (piezoelectric) ultrasonic emitter and receiver inside

49-3-4/16

Investigation of velocities of elastic waves in rock samples at pressures up to 5000 kg/cm^2 . (Cont.)

the pressure bomb, in close contact with the rock sample investigated. The frequencies used were about 100 kc/sec, which are more suitable than the 3 to 5 Mc/sec used by Hughes (18) and (19) which have wave lengths approaching the dimensions of structural inhomogeneities of rocks and cause a dispersion of the velocities. A pulse-type ultrasonic seismoscope was used for the measurements, the design of which was similar to that of the seismoscope **5M-4** developed by the team of the Model Laboratory of the Geophysics Institute, Ac.Sc. (Riznichenko, Yu.V., Ivakin, B.N. and Bugrov, V.R.) (25 to 27), which was developed for model seismic waves and also for generating and receiving mechanical impulses of ultrasonic frequencies when measuring the time of travel of elastic waves in solid specimens and particularly inside mine shafts (29). The experimental results are plotted in Figs. 5-8. Fig. 5 gives the dependence on the pressure of the speed of propagation of longitudinal waves for dolomite; Figs. 6 and 7 give the same dependence for basalt of two different origins and Fig. 8 gives the same dependence for syenite. The table, p. 328, gives the variation of the speed of longitudinal waves as a function of the

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49-3-4/16

Investigation of velocities of elastic waves in rock samples at pressures up to 5000 kg/cm². (Cont.)

pressure in specimens of basalt, syenite and dolomite of pressures of 1 to 5000 kg/cm². Samples of igneous rocks (basalt and syenite) and of sedimentary rocks (dolomite) were investigated, using fresh specimens which were obtained by drilling to a depth of about 50 m. It was found that the velocities of longitudinal waves increase abruptly at pressures up to 500 to 1000 kg/cm², whereupon their increase slows down. This is due to the fact that at 500 to 1000 kg/cm² the pores of rocks are closed by the pressure. It was further found that at pressures of the order of 5000 kg/cm² the velocities of longitudinal waves increase by 10 to 12% in basalt and dolomite and by about 20% in syenite, which is similar to the increase of 10 to 20% in the velocity of longitudinal waves at depths of the order of 20 km. There are 8 figures, 1 table and 33 references, 24 of which are Slavic.

SUBMITTED: May 26, 1956.

ASSOCIATION: Ac.Sc. U.S.S.R. Institute of Physics of the Earth.
(Akademiya Nauk SSSR Institut Fiziki Zemli).

AVAILABLE: Library of Congress

Card 3/3

VOLAROVICH, M.P.

AUTHORS: Volarovich, M.P., and Gurvich, A. S.

49-4-1/23

TITLE: Investigation of the temperature dependence of the dynamic modulus of elasticity of rocks. (Issledovaniye dinamicheskogo modulya uprugosti gornyykh porod v zavisimosti ot temperatury).

PERIODICAL: Izvestiya Akademii Nauk, Seriya Geofizicheskaya, 1957, No.4, pp.417-425 (USSR)

ABSTRACT: The authors used an acoustical method, previously used by one of the authors (Ref.8) and based on measuring the resonance frequency of bending oscillations of a rod, for investigating the modulus of elasticity and the damping decrement of glazes and of other ceramic components at temperatures up to 1000°C. A particular method of determining the dynamic shear modulus of rock melts during solidification was described in earlier work of the author and his team (Refs.18,19). The block schematics of the set-up is shown in Fig.1, p.418. The specimens were in the form of rectangular rods of 11 x 0.8 x 0.7 cm and were placed in the horizontal position into a space heated with a temperature controlled electric furnace. The results obtained for a number of rocks, i.e. diabase, Card 1/3 basalt, granite, marble, quartzite, sandstone and limestone,

49-4-1/23

Investigation of the temperature dependence of the dynamic modulus of elasticity of rocks.

are entered in tables and graphed. The obtained results show that the Young modulus of granite, basalt, diabase, limestone and marble decreases systematically with increasing temperature; for granites the Young modulus drops to one-sixth in the temperature range up to 600°C and then remains almost constant at temperatures up to 900°C. The change in the Young modulus with increasing temperature is less pronounced. In the range of high temperatures, a considerable increase is observed in the decrement of damping of rocks. The Young modulus of glass smolten from basalt and partly crystallised was slightly higher than that of the original basalt; on heating to 800°C it dropped only by about 10%. Sandstone and quartzite show at first a continuous decrease of the Young modulus, up to a temperature of 500°C; this is followed by a sharp decrease with a minimum at 575°C and from then on it begins to increase again. Accordingly, the maximum damping decrement is observed at 575°C. This is attributed to a polymorphous transformation which for quartz takes place at 575°C. On the basis of the data obtained for the Young modulus of rocks, and taking into consideration that the temperature

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49-4-1/23

- Investigation of the temperature dependence of the dynamic modulus of elasticity of rocks.

dependence of the Poisson coefficient is relatively small, it is possible to calculate the speed of propagation of elastic, longitudinal waves in rocks at temperatures up to 1000°C.

There are 8 figures, 3 tables and 19 references, 12 of which are Slavic.

SUBMITTED: May 26, 1956.

ASSOCIATIONS: Ac.Sc. U.S.S.R. Institute of Physics of the Earth (Akademiya Nauk SSSR, Institut Fiziki Zemli) and Scientific Research Institute for Building Ceramics (N.-i. Institut Stroitel'noy Keramiki)

AVAILABLE: Library of Congress.

Card 3/3

VOLAROVICH, M. P.

18 SEP 1984

18 SEP 1984

VOLAROVICH, M. P.

24-12-20/24

AUTHORS: Volarovich, M. P., Kuzhman, G. I., Makov, I. F. and
Churayev, N. V. (Moscow).

TITLE: Use of radioactive isotopes for studying the process of
mixing of peat in machines. (Primeneniye radioaktivnykh
izotopov dlya izucheniya protsessa peremeshivaniya torfa
v mashinakh).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh
Nauk, 1957, No.12, pp.87-89 (USSR)

ABSTRACT: The change in the degree of dispersion of peat during
its processing can be established by means of sedimentary
analysis, as described by some of the authors of this
paper in earlier work (Ref.1). The process of mixing of
the peat during its processing, i.e. the redistribution
of the particles in the peat volume, leading to a
uniformity of the structure of the peat has so far not
been studied at all. Therefore, the authors considered
it of interest to use for this purpose radioactive P^{32}
in an aqueous solution of Na_2HPO_4 , since the authors
found in earlier work (Ref.2) that this substance adheres
strongly to the peat particles. Specimens weighing

Card 1/2 10 to 30 g were selected from the peat and this solution

24-12-20/24

Use of radioactive isotopes for studying the process of mixing of peat in machines.

was added in a quantity such as to obtain a radioactivity of 10 to 20 μ Curie; the peat was thoroughly mixed with the solution and was then made into a ball of 3 to 4 cm dia. The obtained results are plotted in graphs and discussed. Comparison of results of dispersion analysis with the data obtained for the intermixing leads to the conclusion that slot presses intermix satisfactorily the peat but do not disperse it satisfactorily, whilst milling with an end-mill brings about intensive dispersion but little intermixing. A number of recommendations are made for improving the design of machinery for peat production. There are 3 figures and 4 references, all of which are Slavic.

SUBMITTED: July 19, 1957.

ASSOCIATION: Physics Chair, Moscow Peat Institute. (Kafedra Fiziki Moskovskogo Torfyanogo Instituta).

AVAILABLE: Library of Congress.

Card 2/2

VOLAROVICH, M. P.

AGRANAT, N.N.; VOLAROVICH, M.P.

Calculation of the yield values of disperse systems in experiments
with the conic plastometer. Koll. zhur. 19 no.1:3-8 Ja-F '57.
(MLRA 10:4)

1. Moskovskiy torfyanoy institut i Moskovskiy aviatsionnyy institut
im. S. Ordzhonikidze, Kafedra fiziki.
(Viscosimetry) (Lubrication and lubricants) (Suspensions)

VOLAROVICH, M. P.

124-11-12932

Translation from: Referativnyy Zhurnal, Mekhanika, 1957, Nr 11, p 94 (USSR)

AUTHORS: Volarovich, M. P., Churayev, N. V., Minkov, B. Ya.

TITLE: Investigation of the Hydraulic Characteristics of Peat With the Aid of
Radioactive Isotopes. (Issledovaniye vodnykh svoistv torfa pri
pomoshchi radioaktivnykh izotopov)

PERIODICAL: Kolloidn. zh. 1957, Vol 19, Nr 2, pp 159-166

ABSTRACT: Bibliographic entry.

Card 1/1

VOJAROVICH M.P.

degree of the structure the degree of disparity and caused by their freezing

[illegible]

VOLAROVICH, M.P.

20-5-13/60

AUTHOR
TITLE

VOLAROVICH, M.P., CHURAYEV, H.V., MINKOV, B.Ya.
Percolation of Water in Peat, Studied by Means of Radioactive Isotopes.
(Issledovaniye protsessy filtratsii vody v torfe s pomoshch'yu radio-
aktivnykh izotopov - Russian)

PERIODICAL

Doklady Akad.Nauk SSSR, 1957, Vol 114, Nr 5, pp 964-967 (U.S.S.R.)

ABSTRACT

The author above all solved the problem of selecting a suitable "marking" of the water, the motion of which is to be investigated in the peat sample. After a number of experiments it was found that marking by means of radioactive S^{35} (an aqueous solution of $Na_2S^{35}O_4$) is the most favorable. The percolation of the marked water was investigated through peat samples with undestroyed structure. The peat sample cut out from the place where it was found was placed into a glass tube and saturated with distilled water until a constant weight was attained. Marked water was then poured into the tube on top of the peat, and a constant level was maintained. The filtrate was then poured into test glasses, on which occasion the time needed by the filtrate to accumulate was noted down. The activity of the percolated samples was measured by means of an end window counter. The results obtained by these experiments with fuskum peat having the degree of decomposition $R = 10\%$ are shown in form of a diagram. The same diagram shows the dependence of the volume V of the not percolated liquid on the duration of the percolation process. This dependence is nearly linear, which tends to indicate that the percolation coefficient is constant during the experiment. The analysis of

Card 1/2

20-5-13/60

Percolation of Water in Peat, Studied by Means of Radio-active Isotopes.

the curve found indicates the following mechanism of the percolation: The water moving through the pores of the peat presses out the free water (gravitation water) contained in it. First the free water is pressed out from the large pores, after which it is pressed out successively from the smaller pores, until eventually the marked water fills up all passages in the peat through which the water is conducted. The activity of the percolator then is and remains equal to the activity of the marked water. By means of the method suggested here it is possible, together with the method of negative adsorption, to bring about a more exact separation of the types of the water contained in the peat.
(2 illustrations).

ASSOCIATION Moscow Peat Institute.
PRESENTED BY REBINDER I.A., Member of the Academy
SUBMITTED 5.1.1957
AVAILABLE Library of Congress.
Card 2/2

VOLAROVICH, M.P.

10(4); 21(5); 24(8) PHASE I BOOK EXPLOITATION SOV/2457

Vsesoyuznaya nauchno-tekhnicheskaya konferentsiya po primeneniyu radioaktivnykh i stabil'nykh izotopov i izlucheniya v narodnom khozyaystve i nauke. 2d. Moscow, 1957

Teplotekhnika i gidrodinamika: trudy konferentsii, tom 4 (Heat Engineering and Hydrodynamics: Transactions of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science, Vol. 4). Moscow, Gosenergidat, 1958. 88 p. Errata slip inserted. 2,500 copies printed.

Sponsoring Agencies: Akademiya nauk SSSR, and USSR. Glavnoye upravleniye po ispol'zovaniyu atomnoy energii.

Eds.: M. A. Styrkovich (Resp. Ed.), G. Ye. Kholodovskiy, and M. S. Fomichev; Ed. of Publ. House: L. M. Sinel'nikova; Tech. Ed.: M. I. Borunov.

PURPOSE: This collection of articles is intended for scientists and laboratory workers concerned with the use of radioactive and stable isotopes.

COVERAGE: This collection of papers deals with the application of radioactive and stable isotopes as measuring tools in various types of scientific investigation. No personalities are mentioned. References are given after some of the articles.

2. Bartolomey, G.G., Ye.G. Vinokur, V.A. Kolokol'tsev, and V.K. Fetukhov. Use of Gamma Rays for Studying the Process of Diffusion 9
3. Khateladze, B.S., and V.M. Moskvichava. Use of Gamma-radio- 12
scopy for Studying the Hydrodynamics of a Multifluid System
4. Poltavkin, E.G., and N.A. Shapkin. Method of "Tagged" Atoms 16
for Investigating Water and Steam Content in Surface Boiling of a Fluid
5. Rudzavitsay, V.S. Determining the Specific Surface Area of 20
Quartz and Cement Powders by the Sorption Method With the Use of "Tagged" Atoms
6. Moskvin, V.M., and L.I. Kurbakova. Use of Radioactive Isotopes 28
for Studying Sulfate Corrosion of Concrete
7. Yartovitch, M.A., V.L. Farenzkiy, and V.A. Lukin. Methods 33
for Determining the Density and Moisture Content of Soils With the Aid of Radioactive Emissions
8. Polosova, L.G., and R.P. Reyzman. Study of the Processes of 38
Moisture Transfer in Building Materials by Means of Gamma-radio-
scopy
9. Styrkovich, M.A., I.Kh. Khaybullin, and L. K. Khomlov. 41
Use of Radioactive Isotopes for Investigating the Solubility of Salts in Water Vapor at High Pressures
10. Sterman, L.S., A.Ya. Antony, and A.V. Sumov. Investi- 46
gation of the Characteristics of Vapor at a Pressure of 156
abs. atm. With the Aid of Radioactive Isotopes
11. Dubrovskiy, V.A. Use of Radioactive Isotopes for Observing 52
the Motion of the Molten Glass Mass in Glass Furnace Tanks
12. Rakhimskiy, V.V. Use of Radioactive Isotopes in Studying 57
the Filtration of Fluids Through Porous Media
13. Lomunakaya, D.I., and A.Ya. Puzalov. Radioisotope Methods 62
for Investigating Flow Processes of Fluids in a Porous Medium
14. Bortse, M.A., L.S. Zarubin, V.S. Kadnashiy, and L.L. Kovsak. 67
Investigation of the Hydrodynamics of a Fluid in the Conical Rotor of a Settling Centrifuge With the Aid of Radioactive Isotopes
15. Volarovich, M.P., N.V. Churayev, and B.Ya. Minkov. Investi- 72
gations of the Motion of Water in Peat Under Laboratory and Field Conditions With the Use of Radioactive Isotopes
16. Arkhangel'skiy, M.M. Use of Radioactive Isotopes for Investi- 78
gating Suspensions of River Silt
17. Veynik, A.I., and A.S. Shubin. Use of Radioactive Isotopes 85
for Investigating the Mechanism of the Drying Process

VALAROVICH, M. P. and BAIASHOV, D. B.

"Propagation of Ultrasound in Nitrogen at Pressures up to 1,000 Kilograms per Square Centimeter."

report presented at the 6th Sci. Conference on the Application of Ultrasound in the investigation of Matter, 3-7 Feb 1958, organized by Min. of Education RSFSR and Moscow Oblast Pedagogic Inst. im N. K. Krupskaya.

VOLAROVICH, M. P.; SERB-SERBINA, N. N.; DENISOV, N. Ya.; BERESTNEVA, Z. Ya.; KORENUEV,
A. S.; NICHIPORENKO, S. P.; KUKOLEVA, G. V. ; OVCHARENKO, F. D.; ANTIPOV-KARATAYEV, I. N.
Shishniashvili, M. Ye.;

"Structure formation in the colloidal chemistry of clays and peat."

report presented at the Fourth All-Union Conference on Colloidal Chemistry,
Tbilisi, Georgian SSR, 12-16 May 1978 (Koll zhur, 20,5, p.677-9, '78, Taubman, A.B)

VOLAROVICH, M. P., D. B. BALASHOV and Z. I. STAKHOVSKAYA

"Investigation of Elastic Properties of Rocks Under High Pressure" p. 137

~~"Synthesis and Structure of Hydrosilicates containing Simple and Complex Heavy Metal Cations." p. 38~~

Transactions of the Fifth Conference on Experimental and Applied Mineralogy and Petrography, Trudy ... Moscow, Izd-vo AN SSSR, 1958, 516pp.

reprints of reports presented at conf. held in Leningrad, 26-31 Mar 1956. The purpose of the conf. was to exchange information and coordinate the activities in the fields of experimental and applied mineralogy and petrography, and to stress the increasing complexity of practical problems.

VOLAROVICH, M.P., prof.; KUZHMAN, G.I., dotsent; MAKOV, I.F., inzh.;
CHURAYEV, N.V., kand.tekhn.nauk

Studying processes of peat mixing by the peat processing machinery
using radioactive isotopes. Nauch. dokl. vys. shkoly; gor. delo
no.1:275-285 '58. (MIRA 11:6)

1. Predstavlena kafedroy fiziki Moskovskogo torfyanogo instituta.
(Peat machinery) (Radioisotopes)

49-58-5-2/19

AUTHORS: Volarovich, M. P. and Stakhovskaya, Z. I.

TITLE: Investigation by the Method of Bending of the Young Modulus of Rock Specimens in the Case of Applying from All Sides Pressures of up to 5000 kg/cm² (Issledovaniye modulya Yunga obraztsov gornyykh porod pri vsestoronnikh davleniyakh do 5000 kg/cm² metodom izgiba)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1958, Nr 5, pp 582-593 (USSR)

ABSTRACT: Apparatus is described which has been developed for producing a high gas pressure from all sides, enabling obtaining gas pressures of up to 5000 kg/cm² and carrying out in such gaseous media bending tests on rock specimens. The pressure was produced by compressing nitrogen in a high pressure compressor described by L. F. Vereshchagin and V. E. Ivanov (Ref.14, quoting largely the work of Bridgeman) and feeding it into a bomb through a hole (2, Fig.1, p 583). The entire test apparatus was fitted inside a cabin of 1.4 x 1.8 x 2.3 m made of 8 mm thick sheet steel. The authors succeeded in measuring the stresses and strains with a higher accuracy than is possible by using equipment earlier described in literature, by placing the dynamometer and the deformation metering gauge (elastic elements with wire strain gauges)

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49-58-5-2/15

Investigation by the Method of Bending of the Young Modulus of Rock Specimens in the Case of Applying from All Sides Pressures of up to 5000 kg/cm².

inside the high pressure space. The Young modulus was measured at gas pressures between 1 and 5000 kg/cm² by the static method for a number of igneous and sedimentary rocks (basalt, gabbro, diorite, labradorite, cyenite, marble, quartz, sandstone). The rock specimens were tested both in copper foil shells and without such shells. The experiments without copper shells have shown that the Young modulus increases on applying a pressure of up to about 500 kg/cm² and, following that (at higher pressures) it decreases sharply. This is attributed to the fact that the gas penetrates into the pores of the rock and compresses not the entire specimen but individual grains and does not bring about a compression of the substance but, on the contrary, disturbs the coherence of the material. For rock specimens inside a copper shell the Young modulus increases appreciably for the pressure range 1 to 1000 kg/cm² (by 30 to 70% depending on the rock) and this is attributed to the greater degree of compressing the pores. The speed of increase of the Young modulus depends on the porosity of the rock, as well as on the mineralo-

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49-58-5-2/15

Investigation by the Method of Bending of the Young Modulus of Rock Specimens in the Case of Applying from All Sides Pressures of up to 5000 kg/cm².

gical composition, the structure, etc. For pressures from all sides exceeding 1000 kg/cm², the speed of increase of the Young modulus drops sharply; the increase in the modulus in this case is due to compression of the rock substance. The obtained data on the Young modulus of rocks under conditions of applying from all sides pressures up to 5000 kg/cm² correspond with the conditions pertaining at a depth of about 20 km below the surface. Therefore, the results of the experiments are of interest from the point of view of seismic methods of prospecting and also from the point of view of physics of earthquakes, since the foci of the most destructive earthquakes are located at depths of 10 to 40 km. Acknowledgements are expressed to V. A. Pavlogradskiy, A. T. Bondarenko and N. P. Semenova for their assistance in carrying out the experimental work. There are 3 tables, 10 figures and 20 references, of which 15 are Soviet, 1 German and 4 English.

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49-58-5-2/15

Investigation by the Method of Bending of the Young Modulus of Rock Specimens in the Case of Applying from All Sides Pressures of up to 5000 kg/cm².

ASSOCIATION: Akademiya nauk SSSR, Institut fiziki Zemli (Academy of Sciences USSR, Institute of Physics of the Earth)

SUBMITTED: April 22, 1957.

1. Gases--Pressure 2. Rock--Stresses

Card 4/4

VOLAROVICH, M. P.

69-20-1-2/20

AUTHOR: Volarovich, M.P., and Tropin, V.P.

TITLE: Investigation of the Dispersity Degree of Sapropels by Means of a Sedimentometer and an Electron Microscope (Issledovaniye stepeni dispersnosti sapropelay pri pomoshchi sedimentometra i elektronnoy mikroskopy)

PERIODICAL: Kolloidnyy Zhurnal, 1958, Vol. XX, # 1, pp 13-19 (USSR)

ABSTRACT: Sapropels are poly-dispersed systems of deposits formed from dead micro-organisms of plant or animal origin in lakes. The true density of the settling sapropel particles has been measured and its relation to the particle size established by a method developed by Volarovich and Churayev [Ref. 1-3]. Particles with dimensions above 250μ were analyzed by wet sieve analysis; with dimensions from 250μ to 1μ by means of the gravimetric sedimentometer and particles below 1μ by means of the electronic microscope. The dependence of the true density of the settling sapropel particles on their dimensions is shown in fig. 1. The density of coarse detrital and fine detrital sapropels can reach values of $1.01-1.02 \text{ g/cm}^2$ with a density of the dry substance of $2.01-2.09 \text{ g/cm}^3$. The distribution curves of sapropel particles according to size are represented in fig. 2 by a semi-logarithmic scale. Nr. 12 is the curve of coarse detrital, Nr. 13 that of fine detrital, and Nr. 14 the

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69-20-1-2/20

Investigation of the Dispersity Degree of Sapropels by Means of a Sedimentometer and an Electron Microscope

curve of calcerous sapropels. As in the case of peats, the distribution curves are multi-apexed. This is regarded as an indication of heterogeneity of the particles. A convenient expression for the dispersity degree is the value of the specific surface area, which was calculated on the base of the sieve and sedimentometric analyses. For coarse detrital sapropel Nr. 12 the value amounted to $13,892 \text{ cm}^2/\text{g}$, for fine detrital Nr. 13, to $12,965 \text{ cm}^2/\text{g}$, for calcerous sapropel Nr. 14, to $8,168 \text{ cm}^2/\text{g}$. In peats, the average value of the specific surface area varies between 15,000 and 25,000 cm^2/g . The index of heterogeneity was obtained for Nr. 12 = 88, for Nr. 13 = 30 and for Nr. 14 = 9.1. On freezing, the sapropels were found to coagulate, resulting in a considerable drop in their dispersity, as shown in fig. 3. Highly-dispersed fractions of the sapropels were studied by means of an electronic microscope. Photographs were taken with 7,000-8,000 diameter magnification which were projected on a screen resulting in a magnification of 50,000 diameters (Fig. 4) In a number of photographs, diatoms of various shapes were revealed.

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69-20-1-2/20

Investigation of the Dispersity Degree of Sapropels by Means of a Sedimentometer and an Electron Microscope

There are 4 graphs, 2 photos, 2 tables, and 12 references, 11 of which are Soviet, 1 German.

ASSOCIATION: Moskovskiy neftyanoy institut (Moscow Petroleum Institute)

SUBMITTED: May 6, 1947

AVAILABLE: Library of Congress

Card 3/3

VOLAROVICH, M. P.

69-20-1-19/20

AUTHORS: Volarovich, M.P.; Sysoyeva, P.D.; Chernyavskaya, V.V.,
Churayev, N.V.

TITLE: Determination of the Bound Water Content in Peat by the
Method of the Negative Adsorption of a Radioactive Indicator
(Opredeleniye soderzhaniya svyazannoy vody v torfe metodom
otritsatel'noy adsorptsii radioaktivnogo indikatora)

PERIODICAL: Kolloidnyy Zhurnal, 1958, Vol XX, # 1, pp 122-124 (USSR)

ABSTRACT: Radioactive sulfur S^{35} , in the compound Na_2SO_4 , is used for
determining the content of bound water in peat specimens. The
natural humidity of the specimens is increased to 95% by ad-
dition of distilled water. Then 20 g of (M_0) solution of
 $Na_2S^{35}O_4$ is added, and the mixture stirred. After 15 min the
mixture is centrifugalized and the initial and final concen-
tration of the radioactive indicator is measured. A formula
for calculating the amount of bound water in the specimen is
given.

There is 1 table, and 3 Soviet references.
ASSOCIATION: Moskovskiy torfyanoy institut Kafedra fiziki (Moscow Peat
Card 1/2 Institute, Chair of Physics)

69-20-3-9/24

AUTHORS: Volarovich, M.P.; Malinin, N.I.

TITLE: Investigation of Rheological Properties of Low Moisture Peats
(Issledovaniye reologicheskikh svoystv torfov ponizhennoy
vlazhnosti)

PERIODICAL: Kolloidnyy zhurnal, 1958, vol XX, Nr 3, pp 311-317 (USSR)

ABSTRACT: The rheological properties of peats have been studied by measuring the shear between two parallel plates, by using the viscosimeter RV-4, and by the method of cylinder compression. Complete rheological diagrams were obtained, representing a series of curves of the development of deformation (in the coordinates, deformation - time) at constant stress and following removal. The existence of two types of complete rheological diagrams has been established. Diagram type I is observed in peat of plastic consistency which bears considerable deformations during stresses surpassing the static stress of the shear. The speed in this case is relatively high, but the flow is continuous. In Diagram type II, observed in peats of semi-solid consistency, there is no significant plastic flow. For peats of Diagram I, the Shvedov viscosity may be computed at low speed gradients and the plastic (Bingham) viscosity at high speed gradients.

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69-20-3-9/24

Investigation of Rheological Properties of Low Moisture Peats

The deformational properties of peat are described with the aid of 7 structural and mechanical parameters. There are 6 graphs, and 29 references, 24 of which are Soviet and 5 English.

*ASSOCIATION: Moskovskiy torfyanoy institut, Kafedra fiziki (Moscow Peat Institute, Chair of Physics)

SUBMITTED: November 13, 1957

Card 2/2

1. Peat—Properties 2. Viscosimeters—Applications

VOLAROVICH, M. P. and CHURAYEV, I. V.

"The Investigation of the Physico-chemical Properties and the Structure of Peat,
With the Aid of Radioactive Isotopes."

report presented at the Section on Colloid Chemistry, VIII Mendeleyev Conference of
General and Applied Chemistry, Moscow, 16-23 March 1959.
(Koll. Zhur. v. 21, No. 4, pp. 509-511)

ZHOKHOVSKIY, Mikhail Konstantinovich; LOSKUTOV, V.I., kand.tekhn.nauk,
retsensent; VOLAROVICH, M.P., prof., doktor fiz.-matemat.nauk,
red.; ALAVETDOV, Ia.G., red.izd-va; UVAROVA, A.P., tekhn.red.

[Theory and design of instruments with unsealed pistons] Teoriia
i raschet priborov s neuplotnennym porshnem. Moskva, Gos.nauchno-
tekhn.izd-vo mashinostroit.lit-ry, 1959. 203 p. (MIRA 12:12)
(Measuring instruments) (Pistons)

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VOLAROVICH, M. P.

PHASE I BOOK EXPLOITATION SOV/3352

24(1)
Vserossiyskaya konferentsiya professorov i prepodavateley pedagogicheskikh institutov.

Primeneniye ul'traskustiki k issledovaniyu veshchestva; study konferentsii, vyp. 8 (Application of Ultrasonics in the Study of Matter; Transactions of a Conference, Nr. 8) Moscow, Izd. MOPI, 1959. 170 p. 1,000 copies printed.

Tech. Ed.: S. P. Zhitov.

PURPOSE: The book is intended for physicists, particularly those specializing in the field of ultrasonics.

COVERAGE: This is a collection of 12 articles dealing with problems of acoustics, ultrasonics, and molecular physics. References are given at the end of each article.

Erdvodeltelev, A. S. Dispersion of Acoustic Waves in Rarefied Gases. Article I. 19

Zipir, A.-D., and V. P. Yakovlev. Pulse Method for Multiple Transformation of an Ultrasonic Signal in the Investigation of Liquid Media 63

Ilgunas, V., and E. Varonis. On the Theory of Interferometers With Variable and Constant Length 67

Trelin, Yu. S. Some Results of Measurement of Ultrasonic Velocity in Gases by the Pulse Method 75

Volarovich, M. P., and D. B. Mulaahov. Investigation of Ultrasonic Velocity in Nitrogen Under Pressures up to 1050 kg/sq cm 83

Akhmetzyanov, K. G., and M. G. Shirkasiah. Ultrasonic Velocity in Compressed Vapors of Ethyl Alcohol and Determination of Heat Capacities C_p and C_v 93

Perepeshko, I. I. Ultrasonic Propagation in Rarefied Gases 103

Kuchera, E. On Some Conditions for Applicability of Raoult's Law for Solutions 115

Shilyayev, A. S., and B. B. Kudryavtsev. Ultrasonic Velocity and Surface Tension in Ternary Liquid Systems 121

Bessonov, M. B. Measuring Ultrasonic Velocity and Absorption in Solutions at High Temperatures 137 15

VOLAROVICH, M.P., prof., doktor fiz.-mat.nauk; MINKOV, B.Ya., inzh.;
CHURAYEV, N.V., kand. tekhn. nauk

Investigating the efficiency of apparatuses for determination
of peat weight by volume by means of gamma-ray scattering. Nauch.
dokl. vys. shkoly; gor. delo no.1:75-82 '59. (MIRA 12:5)

1. Predstavlena kafedroy fiziki Moskovskogo torfyanogo instituta.
(Peat--Testing) (Gamma rays)

SOV/49-59-1-17/23

AUTHORS: Volarovich, M. P. and Parkhomenko, E. I.

TITLE: Tests on Relationship of Disturbances in the Electric Field of Rocks and Seismic Phenomena with Application of Models having Piezo-Electric Properties
(Modelirovaniye svyazi vozmushcheniya elektricheskogo polya gornyykh porod pri p'yezoelektricheskom effekte s seysmicheskimi yavleniyami)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1959, Nr 1, pp 144-145 + 1 plate (USSR)

ABSTRACT: The piezo-electric properties of rocks containing quartz were investigated. The samples under test were as follows:

- 1) Reznikovskiy granite 31 x 18 x 12 cm;
- 2) Orekhovskiy granite 25 x 5.5 x 5 cm (Fig.1,a);
- 3) Marble 31 x 9 x 5.5 cm;
- 4) Labradorite 30 x 16 x 5 cm.

The last two samples were used only for checking purposes. Also an additional sample of Orekhovsk granite was employed in conjunction with the marble (Fig.1,b). The tests were carried out by means of an

Card 1/3 ultrasonic seismoscope (Ref 3). The following method

SOV/49-59-1-17/23

Tests on Relationship of Disturbances in the Electric Field of
Rocks and Seismic Phenomena with Application of Models having
Piezo-Electric Properties

was used: a transmitter made of Seignette's salt was placed at one side of a sample (Fig.1,U) and connected to the generator of a seismoscope. The impulses of the transmitter were recorded by the seismoscope in the manner of "detonations". A receiver made of Seignette's salt or just the electrodes made of copper foil connected to an amplifier, were placed alternately at some distance from the transmitter along a profile on the sample. The steps between various points were kept constant, equal to 4 or 5 cm. The graphs of the elastic and the electromagnetic oscillations produced on the screen of the seismograph for every point of observation were photographed. Fig.2 shows two examples of oscillations at every 4 cm of the sample Nr 2 (the arrangement of testing is shown in Fig.1). The electromagnetic waves are denoted by 1, the elastic - 2, the elastic magnified - 3. The arrows at the 16 cm Card 2/3 point indicate: a - start of elastic impulse, B - start

SOV/49-59-1-17/23

Tests on Relationship of Disturbances in the Electric Field of
Rocks and Seismic Phenomena with Application of Models having
Piezo-Electric Properties

of the electromagnetic wave, C - start of the elastic wave. Similar experiments were carried out on the sample of marble and labradorite since they have the same electric conductivity as granite (10^{-7} Ohm.cm). The results show very negligible oscillations which died out at about 10 cm. Fig.3 shows the oscillogram obtained from two samples in contact with each other, granite Nr 1 and marble (Fig.1,6). The steps were 5 cm. As can be seen, the results are identical in both cases. These experiments could be applied in investigations not only on the electromagnetic anomalies during an earthquake, but also in the geophysical methods of surveying where granite rocks are present.

There are 3 figures and 3 Soviet references.

ASSOCIATION: Akademiya nauk SSSR, Institut fiziki Zemli
(Ac.Sc. USSR, Institute of Earth Physics)

SUBMITTED: October 21, 1957

Card 3/3

VOZAROVICH

SOV/30-59-2-25/60

10(0)

AUTHORS:

Trapeznikov, A. A., Volarovich, M. P.

TITLE:

News in Brief (Kratkiye soobshcheniya).
III. International Congress on Rheology (III. Mezhdunarodnyy
kongress po reologii)

PERIODICAL:

Vestnik Akademii nauk SSSR, 1959, Nr 2, pp 82-83 (USSR)

ABSTRACT:

The Congress was held at Bad-Oeynhausen (German Federal Republic) between September 23 and September 30, 1958. Scientists from 18 countries took part in it. Reports on various fields of rheology were heard and discussed. N. V. Mikhaylov, M. P. Volarovich, G. V. Vinogradov, A. A. Trapeznikov, Yu. F. Deynaga (all from the USSR) delivered a number of reports on those problems. For the time of the Congress an exposition of rheological apparatus had been provided for. The shown rotational viscosimeters are regarded by the authors to be especially appropriate.

Card 1/1 ⁰³

SOV/69-21-2-6/22

5(
AUTHORS: Volarovich, M.P., Churayev, N.V.

TITLE: A Study of the Aqueous Qualities and Structure of Peat with the Aid of Radioactive Isotopes. (Izucheniye vodnykh svoystv i struktury torfa pri pomoshchi radioaktivnykh izotopov.)
1. Aqueous Qualities and Structure of Peat. (1. Vodnyye svoystva i struktura torfa)

PERIODICAL: Kolloidnyy zhurnal, 1959, Nr 2, pp 157-163 (USSR)

ABSTRACT: The authors report on methods developed or used by them to determine the various forms of linked water in peat. The methods are based on the use of radioactive isotopes. For their experiments, the authors used the isotope sulphur-35 in the compound Na_2SO_4 , which is not absorbed by peat in its solid phase. The comparison of the results of the determination of linked water in various peat specimens, which with the aid of the radioactive indicator were obtained by the use of the non-dissolving reagent and marked water filtration methods, permitted the evaluation of the different forms of linked water, and even the establishment

Card 1/3

SOV/69-21-2-6/22

A Study of the Aqueous Qualities and Structure of Peat with the Aid of
Radioactive Isotopes. 1. Aqueous Qualities and Structure of Peat.

of such linkage categories as intercellular, structurally linked and capillary peat water. The experiments have shown that most of the linked water belongs to the capillary and intercellular categories. The content of the various forms of linked water depends on the botanical composition and the degree of decomposition of the peat. The method of filtering marked water through a peat specimen permits the determination of the active porosity, the kinetic specific surface and the hydraulic radius of the pores of the peat. This data can be utilized as characteristics of the peat structure. The following scientists are mentioned in the article: A.V. Dumanskiy, Rebinder, S.S. Korchunov, M.P. Volarovich, Gusev, P.A. Kryukov, N.A. Komarova, G.I. Pokrovskiy, S.I. Sinel'shchikov, K.K. Apush-

Card 2/3

SOV/69-21-2-6/22

. . A Study of the Aqueous Qualities and Structure of Peat with the Aid of
Radioactive Isotopes. 1. Aqueous Qualities and Structure of Peat.

kin, A.A. Berezin, A.A. Grebenshchikov. There are 3 tables
and 29 Soviet references.

ASSOCIATION: Moskovskiy torfyanoy institut (Moscow Peat Institute)
Kafedra fiziki (Chair of Physics)

SUBMITTED: May 29, 1958

Card 3/3

83623

S/081/60/000/014/002/009

A006/A001

24.1800

Translation from: Referativnyy zhurnal, Khimiya, 1960, No. 14, p. 42, # 56125

AUTHORS: Volarovich, M.P., Balashov, D.B.

TITLE: Investigation of Ultrasonic Velocity in Nitrogen at a Pressure up to 1,050 kg/cm²

PERIODICAL: V sb.: Primeneniya ul'traakust. k issled. veshchestva, No. 8, Moscow, 1959, pp. 83 - 91

TEXT: The ultrasonic velocity (v) (115 kilocycles frequency) in nitrogen at 25°C and up to 1,050 kg/cm² pressure was measured by the pulse method. The ultrasonic velocity increases linearly from 358 to 873 m/sec at an increase in the pressure from atmospheric pressure to 1,050 kg/cm². The values of ultrasonic velocity, v , were calculated using the Khimpan state equation (RZhKhim, 1956, No. 3, # 6283; No. 8, # 21878; No. 10, # 28391) which are in a satisfactory agreement with experimental data found at pressures below 100 kg/cm². At a higher pressure the calculated values of the ultrasonic velocity are below those observed in the experiments (at a pressure of 1,100 kg/cm² the discrepancy

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83623

S/081/60/000/014/002/009
A006/A001

Investigation of Ultrasonic Velocity in Nitrogen at a Pressure up to 1,050 kg/cm²
is 23%) since at high pressures the Khimpan equation yields too low values of
the isothermal modulus of volumetric compression. ✓

B. Kudryavtsev

Translator's note: This is the full translation of the original Russian
abstract.

Card 2/2

5(4)

SOV/69-21-3-2/25

AUTHORS: Volarovich, M.P., Gamayunov, N.I., Starikova, Z.A.,
Churayev, N.V.

TITLE: A Study of the Aquatic Properties and the Structure of Peat With the Aid of Radioactive Isotopes - 2. Changes in the Aquatic and Structural Properties of Peat, when Dispersed or Pressed

PERIODICAL: Kolloidnyy zhurnal, 1959, Vol XXI, Nr 3, pp 257-262 (USSR)

ABSTRACT: The authors describe an experiment carried out with the aid of a radiotracer (Na_2SO_4 with isotope S^{35}) to determine the change in the aquatic properties and the structure of samples of dispersed and compressed peat of different processing stages. The used methods allowed measuring of the total water content of the samples, i.e. the measurements included the water within the cellular cavities of the plant residues, which constitute a considerable part of the peat. It was

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SOV/69-21-3-2/25

A Study of the Aquatic Properties and the Structure of Peat With the Aid of Radioactive Isotopes - 2. Change in the Aquatic and Structural Properties of Peat, when Dispersed or Pressed

observed that dispersing and compressing of the samples resulted in a diminution of their water content, due to the partial liberation of intracellular water and its passing into the free liquid. This was accompanied by destruction and deformation of the plant residues, which in its turn caused an increase in the active porosity of the peat, particularly in its disperse phase. It was further observed, that during dispersion and compression the kinetic specific surface of the peat considerably increases, whereas the diameter of the pores which determine the internal water transport, is reduced. The pressure needed to make a great part of intercellular liquid pass into free water does not exceed 1 kg/cm^2 . It results therefrom, that this kind of water linkage in peat is energetically very weak. The methods developed by the authors permit their being used also for technological processes, which are con-

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307/69-21-3-2/25

A Study of the Aquatic Properties and the Structure of Peat With
the Aid of Radioactive Isotopes-2. Change in the Aquatic and Structural
Properties of Peat, when Dispersed or Pressed

nected with the change in aquatic properties and the
structure of peat. The following Soviet scientists
(all covered by references) are mentioned in the ar-
ticle: A.A. Berezin, I.D. Belovidov, I.M. Litvinov
and M.G. Bulynko. There are 3 graphs, 2 tables and
17 Soviet references.

ASSOCIATION: Moskovskiy torfyanoy institut, Kafedra fiziki
(Moscow Peat Institute, Chair of Physics)

SUBMITTED: 19 June 1958

Card 3/3

3(9)
AUTHORS: Volarovich, M. P., Parkhomenko, E. I., Sobolev, G. A. SOV/20-128-3-25/58

TITLE: Investigation of the Piezoelectric Effect of Quartz-bearing Rocks in the Open Air

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 3, pp 525-528 (USSR)

ABSTRACT: The authors first mention previous articles dealing with the above subject. They investigated bare quartzites and gneisses near the cities of Kyshtym and Karabash, Central Ural, and also granite gneisses of the faulted zone on the Irtysh river, East Kazakhstan. The experiments were made for the purpose of determining the pure piezoelectric effect of the above rocks in massive strata. Electric oscillations resulting from the piezoelectric effect are excited due to the propagation of elastic waves throughout quartzite-bearing rock. The waves were produced by a steam ram. The measuring instruments used by the authors featured several channels and permitted simultaneous recording of electric and elastic oscillations. Each channel was composed of a signal receiver, an amplifier, and a galvanometer. The authors measured the

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80V/20-128-3-25/58

Investigation of the Piezoelectric Effect of Quartz-bearing Rocks in the
Open Air

potential difference between the movable electrode fastened to the profile and the grounded electrode fastened outside the quartz-bearing massif. The electrodes and seismographs were placed side by side on the rock surface. The seismic and electric oscillations resulting from the shock were simultaneously recorded on one oscillogram. In the investigations carried out in Ural, a piezoelectric effect of quartzites and gneisses was recorded at distances of up to 6 m from the point of the shock. Electric oscillations were recorded at various distances from this point. In measurements on frequencies of 350 cycles, the absolute value of the recorded electric signals was 1,000 μ v 1.5 m far from the point of the shock, and \sim 500 μ v at a distance of 6 m. At 1,000 cycles, electric oscillations were weaker by one order. Granite gneisses of Kazakhstan permitted observation of piezoelectric oscillations over a distance of 40 m. Electric signals were recorded some time after the shock, e.e. just when the elastic pulse reached the point of reception. Thus, the piezoelectric effect was recorded that had been produced within the electrode range. To gather additional data on the piezoelectric effect

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SOV/20-128-3-25/58

Investigation of the Piezoelectric Effect of Quartz-bearing Rocks in the Open Air

of the rocks investigated in the open air, the piezoelectric moduli were measured also in a laboratory. The results are similar to those obtained from measurements in the open air. A. G. Ivanov (Ref 4) observed current pulses during mechanical shocks. Theoretical investigations were carried out by A. V. Shubnikov (Ref 1). There are 2 figures and 6 Soviet references.

ASSOCIATION: Institut fiziki Zemli im. O. Yu. Shmidta Akademii nauk SSSR
(Institute for Physics of the Earth imeni O. Yu. Shmidt of the Academy of Sciences, USSR)

PRESENTED: May 25, 1959, by A. V. Shubnikov, Academician

SUBMITTED: May 19, 1959

Card 3/3

VOLAROVICH, M. P.

VOLAROVICH, M. P., G. Ia. Voronkov, E. P. Kovalevskiy, G. I. Kuzhman,
"Studies of Viscoelastic Properties of porous bodies (e. g. peat) by the
ultrasonic pulse method."

report presented at the 1st All-Union Congress of Theoretical and
Applied Mechanics, Moscow, 27 Jan - 3 Feb 60

VOLAROVICH, Mikhail Pavlovich; CHURAYEV, Nikolay Vladimirovich;
PETRENKO, I.G., otv.red.; MEDER, V.M., red.izd-va;
YEPIFANOVA, L.V., tekhn.red.

[Study of the properties of peat and of processes occurring
in it by means of radioisotopes] Issledovanie svoistv torfa
i protekaiushchikh v nem protsessov pri pomoshchi radio-
aktivnykh izotopov. Moskva, Izd-vo Akad.nauk SSSR, 1960.
195 p. (MIRA 14:2)

(Peat) (Radioisotopes--Industrial applications)

VOLAROVICH, M. P.

PHASE I BOOK EXPIRATION 80V/5207

Yevroasiyskaya konferentsiya professorov i pedagogov pedagogicheskikh institutov Prikladnyye ultrazvukovye issledovaniya vushchevaya (Qualification of Ultrasonics for the Investigation of Matter) Moscow, Izd. MGPI, 1960. 267 p. 1,000 copies printed. (Series: Its Study, v. 11)

24. (Title page): V.F. Rodnev, Professor and B.B. Rudravtsev, Professor.

REMARK: This collection of articles is intended for physicists specializing in the physics of ultrasound.

CONTENTS: The collection of articles constitutes the transactions of the VII Conference on the Applications of Ultrasonics to the Study of Materials, which was held at the Moscow Oblast Pedagogical Institute named M.K. Krupskaya. Individual articles of the collection discuss various problems in the wave mechanics of ultrasound, the absorption and the propagation mechanics of ultrasonic waves in various media, the operating principle and design of generators and receivers of ultrasonic waves, the spread of sound and methods for its determination. Other articles deal with the applications of ultrasonics to investigations of the properties of materials. No personalities are mentioned. References accompany

Zil'ber, A.B., and V.F. Yakovlev [Moscow Oblast Pedagogical Institute named M.K. Krupskaya]. Elementary Theory of the Crystal Transformer Operating as a Receiver 89

Kal'ynov, B.I. [Izoborskiy pedinstitut-Tashov Pedagogical Institute]. Some Problems of the Theory of Crystal Transformers 91

Rudravtsev, B.B. [Moscow Oblast Pedagogical Institute named M.K. Krupskaya]. Calculation of Spectra of Sound in Binary Mixtures 93

Sentrich, A.A. [Moscow Oblast Pedagogical Institute named M.K. Krupskaya]. Theory of Molecular Acoustics 95

Gilinskiy, A.A. [Moscow Oblast Pedagogical Institute named M.K. Krupskaya]. Nature of the Stokes Factor 97

Kaspar'yants, A.A. [Obshchiy gosudarstvennyy universitet imeni I.I. Mechnikova]. Hydrodynamic Theory of the Propagation of Sound Waves in a Liquid. 99

Bozars, P., and A. Opilski [Department of Physics of the Agricultural College of Olshaty]. Verification of the Interpretation of Acoustic Concentration Curves 99

Zil'ber, A.B., and V.F. Yakovlev [Moscow Oblast Pedagogical Institute named M.K. Krupskaya]. Experimental Basis of Methods for Using Multiple Echoes to Investigate Liquid Media at Low Frequencies 107

Zukhlov, G.A., and P.F. Chibrikov [Institut metallurgii AN SSSR - Institute of Metallurgy of the Academy of Sciences USSR]. Using the Electron-Acoustic Transformer for Investigating the Homogeneity of Metals 125

Bozars, P.M. [Ordinarniy pedagogicheskii institut-Orlov Pedagogical Institute]. Changing the Natural Frequency of Magnetostriiction Vibrators With the Aid of Additional Masses 135

Shlyapnikov, V.F. [Tashov Pedagogical Institute]. The Electrostriction of a Liquid as a Source of Ultrasonic Oscillations 139

Volarovich, M.P., and Ye.I. Rayuk [Institut fiziki Zemli AN SSSR - Institute of Physics of the Earth AN USSR]. Investigation of Elastic Properties of Rock Samples Under All-Around Pressures of Up to 1000 kg/cm² 147

Kusova, A.V., and B.B. Rudravtsev [Moscow Oblast Pedagogical Institute named M.K. Krupskaya]. Propagation of Sound in Disperse Media 155

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VOLAROVICH, M. P.

PHASE I BOOK EXPIRATION 80V/5210

APPROVED FOR RELEASE: 03/14/2001

CIA-RDP86-00513R001860420006-4"

Uzbekskaya konferentsiya po mirnomu ispol'zovaniyu atomnoy energii, Tashkent, 1959.

Energy (Transactions of the Tashkent Conference on the Peaceful Use of Atomic Energy) v. 2. Tashkent, Izd-vo AN UzSSR, 1960. 144 p. Edition slip inserted. 1,000 copies printed.

Sponsoring Agency: Akademiya nauk Uzbekskoy SSR.

Responsible Ed.: S. V. Starodubtsev, Academician, Academy of Sciences Uzbek SSR. Editorial Board: A. A. Abdullayev, Candidate of Physics and Mathematics; D. M. Abdurazulov, Doctor of Medical Sciences; U. A. Amirov, Academician, Academy of Sciences Uzbek SSR; A. A. Borodulina, Candidate of Biological Sciences; V. N. Ivanov; G. S. Ibratova; A. Ye. Kiv; Ye. N. Labanov, Candidate of Physics and Mathematics; A. I. Nikolayev, Candidate of Medical Sciences; D. Nishanov, Candidate of Chemical Sciences; A. S. Sadykov, Corresponding Member, Academy of Sciences USSR, Academician, Academy of Sciences Uzbek SSR; Yu. M. Talanin,

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Transactions of the Tashkent (Cont.)

SOV/5410

Candidate of Physics and Mathematics; Ya. Kh. Turakulov, Doctor of Biological Sciences. Ed.: R. I. Khamidov; Tech. Ed.: A. G. Babakhanova.

PURPOSE: The publication is intended for scientific workers and specialists employed in enterprises where radioactive isotopes and nuclear radiation are used for research in chemical, geological, and technological fields.

COVERAGE: This collection of 133 articles represents the second volume of the Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy. The individual articles deal with a wide range of problems in the field of nuclear radiation, including: production and chemical analysis of radioactive isotopes; investigation of the kinetics of chemical reactions by means of isotopes; application of spectral analysis for the manufacturing of radioactive preparations; radioactive methods for determining the content of elements in the rocks; and an analysis of methods for obtaining pure substances. Certain

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Transactions of the Tashkent (Cont.)

SOV/5410

- instruments used, such as automatic regulators, flowmeters, level gauges, and high-sensitivity gamma-relays, are described. No personalities are mentioned. References follow individual articles.

TABLE OF CONTENTS:

RADIOACTIVE ISOTOPES AND NUCLEAR RADIATION
IN ENGINEERING AND GEOLOGY

Lobanov, Ye. M. [Institut yadernoy fiziki UzSSR - Institute of Nuclear Physics AS UzSSR]. Application of Radioactive Isotopes and Nuclear Radiation in Uzbekistan

7

Taksar, I. M., and V. A. Yanushkovskiy [Institut fiziki AN Latv SSR - Institute of Physics AS Latvian SSR]. Problems of the Typification of Automatic-Control Apparatus Based on the Use of Radioactive Isotopes

9

Card 3/20

Transactions of the Tashkent (Cont.)	SOV/5410	
Uklonskiy, A. S. [Institut geologii AN UzSSR - Institute of Geology AS UzSSR]. Geochemical Significance of Isobars and Isotopes of Stable Isotopes		226
Volarovich, M. P., and N. V. Churayev [Moskovskiy torfyanoy Institut - Moscow Peat Institute]. Application of the Method of Radioactive Indicators in Studying the Problem of Water Movement in Peat Deposits During Drainage		230
Churayev, N. V. [Moscow Peat Institute]. Investigation of Water Properties, Structure, and Processes of Moisture Transfer in Peat Using Tracer Atoms		243
Iobanov, Ye. M., N. S. Matveyev, B. Ye. Krilov, and R. I. Gladysheva [Institute of Nuclear Physics AS Uzbek SSR]. Portable Radioactive Density Indicators		254
Pavlovskiy, B. P., B. S. Mazitov, and B. B. Akabirov [Institute of Nuclear Physics AS UzSSR]. Roentgenostereoscopic Unit		258
Card 12/20		

37923

S/262/62/000/006/016/021
I007/I207

11.4100

AUTHORS: Volarovich, M.P., Valdman, V.L.

TITLE: Investigations on low-temperature properties of lube oils to which high-polymer admixtures have been added

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk. 42. Silovye ustanovki, no.6, 1962, 77, abstract 426372. ("Tr.3-y Vses. konferentsii po treniyu i iznosu v mashinakh." v.3, Moscow, AS USSR, 1960, 256-261).

TEXT: Lube-oils with high polymer additives of the paratonsuperol type have an increased viscosity index. The authors investigated and compared the following oil grades: spindle oil 3 with an addition of 3-6% superol and 10-30% vinipol, avtol 18, avtol 10 [Abstractor's note: a Soviet type of lube oil for automobiles], as well as the SAE-10, SAE-30, SU, MZS, MK, MS, A-18, and other oil grades. Petroleum lube oil, and oils with additives have been subjected to comparative tests on a special test stand permitting the

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S/262/62/000/006/016/021
I007/I207

Investigations on low-temperature ...

simulation of the kinematic couples "piston-cylinder" and "shaft-bearing". These tests showed that at low temperatures, the piston-shifting force and the shaft torque are greater when using petroleum lube oils instead of high-polymer solutions in low-viscosity oils. There are 6 diagrams and 16 bibliographical references.

[Abstractor's note: Complete translation.]

Card 2/2

VOIAROVICH, M.P.; BONDARENKO, A.T.

Studying electric resistance in rock specimens subjected
to a surrounding pressure up to 1000 kg/cm². Izv.AN SSSR.
Ser.geofiz. no.7:946-953 J1 '60. (MIRA 13:7)

1. Akademiya nauk SSSR Institut fiziki Zemli.
(Rocks--Electric properties)

86210

9.9865

S/049/60/000/008/007/015
E201/E191

AUTHORS: Volarovich, M.P., Levykin, A.I., and Sizov, V.P.
TITLE: A Study of Attenuation of ¹²Elastic Waves in Rock Samples
PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya,
1960, No. 8, pp.1198-1203 (+ 1 plate)

TEXT: The authors used 1 Mc/s ultrasonic pulses, reflected many times between the working surfaces of a cylindrical rock sample, to study attenuation of elastic waves. The diameter of the sample was 6-10 times greater than the wavelength of elastic waves, i.e. the sample could be regarded as massive for the purpose of these experiments. The block circuit of the apparatus is shown in Fig.1. A standard generator (1 in Fig.1) 26-I (26-I) produced square modulating pulses of 100 V amplitude and 10 μ sec duration. These pulses were fed to a generator of r.f. pulses (2 in Fig.1). The pulse repetition frequency and the duration of pulses was governed by the generator 26-I. A pulse of 1 Mc/s frequency and 10 μ sec duration obtained with this apparatus is shown in Fig.2 (plate). From the output cathode follower of the generator 2 (Fig.1) the pulses travelled along a coaxial cable to a piezo-electric quartz plate 3, which served as a source of ultrasonic

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86210

S/049/60/000/008/007/015

E201/E191

A Study of Attenuation of Elastic Waves in Rock Samples

pulses. The ultrasonic pulses travelled along a rock sample 4, and were detected with a piezoelectric quartz plate 5. The pulses were then amplified with a wide-band amplifier 6, and were applied to the vertical plates of an oscillograph 8 (this oscillograph is marked by a square box to distinguish it from a coil, also numbered 8). The oscillograph sweep was synchronized with pulses from the generator 1. To obtain the optimum energy transfer between the quartz transducers and the rock sample, matching circuits, consisting of coils 7 and 8 and capacitances of the quartz plates, were used. Fig.3 (plate) shows a typical oscillogram obtained in a sample of gabbro. Figs 4 and 5 (plate) give oscillograms recorded in gabbro, diorite and granite (Fig.4), in aluminium and marble (Fig.5). Figs 6 and 7 give the dependence of the amplitude of the ultrasonic pulses on the distance along the various rock samples (Fig.6) or along aluminium, brass, Plexiglas and granite (Fig.7). A table on page 1200 gives the amplitude attenuation factor for longitudinal ultrasonic waves travelling in basalt, gabbro, marble, gabbrodiorite, quartz sandstone, syenite, granite, labradorite, aluminium, brass and Plexiglas.

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86110

S/049/60/000/008/007/015
E201/E191

A Study of Attenuation of Elastic Waves in Rock Samples

The table shows that the attenuation factor (cols 5 and 6) of rocks is not related to the velocity of propagation of longitudinal waves (col.3). The attenuation factor depends on the composition of a mineral, its crystal structure, porosity, grain dimensions and types of grain boundaries.

There are 7 figures, 1 table and 41 references: 29 Soviet, 8 English, 2 Japanese and 2 translations.

ASSOCIATION: Akademiya nauk SSSR, Institut fiziki zemli
(Physics of the Earth Institute, AS USSR)

SUBMITTED: December 29, 1959

Card 3/3

KIM, A.Kh., VOLAROVICH, M.P.

Two-dimensional problem of the motion of a viscoplastic disperse system between two planes forming an acute angle. Koll. zhur. 22 no.2:186-194 Mr-Apr '60. (MIRA 13:8)

1. Kalininskiy forfyanoy institut i Belorusskiy politekhnicheskii institut.

(Viscosity) (Colloids)

VOLAROVICH, M.P.; VORONKOV, G.Ya.

Electrokinetic properties of peat. Koll.shur. 22 no.3:
301-304 My-Je '60. (MIRA 13:7)

1. Kalininskiy torfyanoy institut, Kafedra fiziki.
(Peat--Electric properties)

VOLAROVICH, M.P.

Radioisotopes in the study of the properties of peat and the
processes taking place in it. Koll. zhur. 22 no. 5:524-534
S-O '60. (MIRA 13:10)

1. Kalininskiy torfyanoy institut.
(Peat) (Radioactive tracers)

VOLAROVICH, M.P.: GAMAYUNOV, N.I.; CHURAYEV, N.V.

Study of thermomoiature conductivity in peat. Koll. zhur. 22
no. 5:535-542 S-O '60. (MIRA 13:10)

1. Kalininskiy torfyanoy institut.
(Peat)

VOLAROVICH, M.P.; GUTKIN, A.M.

Compression of a viscoelastic disperse system in the form of
a rectangular bar. Koll. zhur. 22 no. 5:543-545 S-O '60.
(MIRA 13:10)

1. Kalininskiy torfyanoy institut.
(Colloids)

VOLAROVICH, M.P.; MUKHINA, T.S.; TROPIN, V.P.; CHURAYEV, N.V.

Electron microscopy of peat and its components. Koll. zhur.
22 no. 5:553-556 S-O '60. (MIRA 13:10)

1. Kalininskiy torfyanoy institut.
(Peat)

VOLAROVICH, M.P.; LISHTVAN, I.I.; CHURAYEV, N.V.

Humous sols from peat. Part 1: Structural and mechanical
properties and their changes with the addition of electrolytes.
Koil zhur. 22 no. 5:546-552 S-O '60. (MIRA 13:10)

1. Kalininskiy torfyanoy institut.
(Peat) (Colloids)

84664

S/020/60/135/001/017/030
B006/B056

3.9300

AUTHORS: Volarovich, M. P. and Bayuk, Ye. I.
TITLE: The Influence Exerted by a Uniform Pressure of up to
4000 kg/cm² Upon the Elastic Properties of Rock Samples
PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 1,
pp. 65-68

TEXT: The authors investigated the elastic properties of rock samples under high universal pressure by measuring the propagation rates of longitudinal waves: $v_{pb} = (E/\rho)^{1/2}$ - the propagation rate in a thin bar and $v_{p\infty} = [E(1-\sigma)/\rho(1+\sigma)(1-2\sigma)]^{1/2}$ - the propagation rate in an infinite medium (E - Young's modulus, ρ - density, σ - Poisson coefficient); the experiments took place in a high-pressure chamber, in which the pressure could be varied from normal to 4000 kg/cm². The ultrasonic velocity was measured by means of a pulse method, where a modified ИКЛ-5 (IKL-5) type device was used. As transmitter and receiver ammonium dihydrophosphate

Card ~~1/4~~

84664

The Influence Exerted by a Uniform Pressure of up to 4000 kg/cm² Upon the Elastic Properties of Rock Samples S/020/60/135/001/017/030
B006/R056

crystals were used; for the purpose of measuring V_p , the authors operated with 100, and for measuring V_m with 600 kc/sec. The samples investigated had the shape of circular cylinders with 3 cm diameter and 16-20 cm length. The various ore samples are numbered (cf. Table 2). The results of measurements are shown in form of diagrams, the assignment of the curves to the samples takes place according to the same numbers. Fig. 1 shows the propagation rate of longitudinal and transversal waves as functions of the pressure brought to bear upon the sample. In general, the curves within the range below 1000 kg/cm² showed a steeper rise; in the further course, the pressure dependence of V is insignificant or V is entirely independent of pressure. Fig. 2 shows the Young's modulus and the modulus of shearing as a function of pressure. The course taken by the curves is similar to that in Fig. 1. The results of the measurements of the Poisson coefficient at various pressures are given in Table 2: ✓

Incl. Phys. Earth

Card 2/4

6-8000(3201,1099,1162)

86833
S/020/60/135/005/022/043
B019/B067

AUTHORS: Volarovich, M. P. and Balashov, D. B.
TITLE: Effect of Pressures of Up to 5000 kg/cm² on Velocity and Absorption of Ultrasonics in Nitrogen
PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 5, pp. 1117-1119

TEXT: The experiments described here were made by means of an electro-mechanical radiator prepared from Rochelle salt and ammonium dihydro-phosphate at 20° and at pressures of up to 5000 kg/cm² in a frequency range of from 160-310 kilocycles. The pressure dependence of the ultra-sonic velocity v which is shown in Fig. 1 indicates that by increasing the pressure from 0 to 5000 kg/cm² v increases by the five-fold, i.e. from 352 to 1723 m/sec. Table 1 gives comparisons with results obtained by other authors. Fig. 2 shows the pressure dependence of the damping coefficient. There are 2 figures, 1 table, and 8 references: 4 Soviet, 1 French, 1 German, and 1 US.

Card ~~1/4~~

Inst Physics of The Earth

FADEYEVA, Vera Sevast'yanovna; VOLAROVICH, M.P., doktor fiz.-mat. nauk,
prof., nauchnyy red.; ABUTKINA, E.I., red. izd-va; RUDAKOVA,
N.I., tekhn. red.

[Shapability of dispersed plastic materials] Formuemost' pla-
stichnykh dispersnykh mass. Moskva, Gos. izd-vo lit-ry po
stroit., arkh. i stroit. materialam, 1961. 126 p.
(MIRA 14:9)

(Building materials--Testing)

VOLAROVICH, M.P.; BAYUK, Ye.I.; LEVYKIN, A.I.

Elastic properties of rocks and the absorption of elastic waves by them at high all-round pressures. Prim. ul'traakust. k issl. veshch. no.13:55-61 '61. (MIRA 16:6)

(Rocks---Elastic properties)
(Elastic waves)